sible cut the tissue and immersed it in a phosphate-buffered saline solution maintained at salt and pH levels comparable to those found in living organisms.

In 1954 Sjöstrand presented a paper at the VIIIth Congress of Cell Biology in Leiden in which he set out to "survey the studies of the mitochondria structure that have been performed by Palade at the Rockefeller institute in New York and by our group at the Karolinska institutet in Stockholm" (1955a, p. 16). He presented only his own micrographs and began the paper by offering his interpretation of mitochondrial structure. But he then turned to the differences, noting first that "These discrepancies were more pronounced earlier but have been reduced with the improvement of the technique used by Palade" (Sjöstrand, 1955a, p. 19). Sjöstrand reiterates his contention that the inner membranes are not continuous with the membranes surrounding the mitochondrion and that there is no central space extending the length of the mitochondrion. He allowed that sometimes the membranes "do not form complete septa" so that there is communication between some of the compartments created by the inner membranes. But, he contended,

> The central space as depicted by Palade appears to us as a fixation artefact due to swelling of the mitochondria. Palade, seems not to have observed the susceptibility of the mitochondria to hypotonic media as the buffered osmium tetroxide solution originally recommended by him is strongly hypotonic. A similar swelling also occurs in a fairly rapid post mortem change and, therefore, appears deaper [sic] than 40–50μ below the surface of the tissue block. Palade's pictures show an appearance of the mitochondrion which is similar to the one we have observed as a result of post mortem changes. (p. 21)

In that paper Sjöstrand also took exception to proposals (such as Palade's, although he did not name Palade) linking the structural features of mitochondria to their biochemical function:

> What does this organization of the mitochondria mean? We may talk about the membranes as useful in realizing an orderly arrangement of the enzyme molecules to give fortunate spatial relations between enzymes taking part in chain reactions. We do not know, however, where the enzyme molecules are located and I think the speculations regarding the functional significance of these structures at this state [sic] may be reserved for very informal discussions or private contemplation. (p. 29)

Palade (1953), for his own part, explicitly credited Sjöstrand only for his determination that the mitochondrial membrane is a double membrane. Without specifically naming Sjöstrand, he offered a critical test between Sjöstrand's and his own proposals regarding the cristae. If they were true septa, he argued,